

Indiana University – Purdue University Fort Wayne  
**Opus: Research & Creativity at IPFW**

---

Computer and Electrical Engineering Technology &  
Information Systems and Technology Senior Design  
Projects

School of Engineering, Technology and Computer  
Science Design Projects

---

4-20-1984

# Keyboard Monitor Interface

Thomas A. Welch

*Indiana University - Purdue University Fort Wayne*

Follow this and additional works at: [http://opus.ipfw.edu/etcs\\_seniorproj](http://opus.ipfw.edu/etcs_seniorproj)



Part of the [Computer Sciences Commons](#), and the [Engineering Commons](#)

---

## Opus Citation

Thomas A. Welch (1984). Keyboard Monitor Interface.  
[http://opus.ipfw.edu/etcs\\_seniorproj/490](http://opus.ipfw.edu/etcs_seniorproj/490)

This Senior Design Project is brought to you for free and open access by the School of Engineering, Technology and Computer Science Design Projects at Opus: Research & Creativity at IPFW. It has been accepted for inclusion in Computer and Electrical Engineering Technology & Information Systems and Technology Senior Design Projects by an authorized administrator of Opus: Research & Creativity at IPFW. For more information, please contact [admin@lib.ipfw.edu](mailto:admin@lib.ipfw.edu).

# **SENIOR DESIGN**

## **TECHNICAL REPORT**

for

KEYBOARD MONITOR INTERFACE

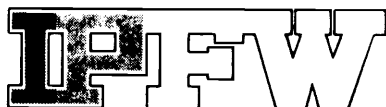
---

title

in partial fulfillment of the requirements

for the degree of

### **BACHELOR OF SCIENCE**



presented to the

ELECTRICAL ENGINEERING TECHNOLOGY FACULTY

INDIANA UNIVERSITY-PURDUE UNIVERSITY AT FORT WAYNE

APRIL 20, 1984

---

date

by

THOMAS A. WELCH

---

GRADE: \_\_\_\_\_

APPROVED: \_\_\_\_\_

## CONTENTS

ABSTRACT.....	1
INTRODUCTION.....	2
Purpose.....	2
Statement of problem.....	2
Plan of procedure.....	2
SYSTEM DESCRIPTION.....	4
CRT Basics.....	4
The 8275 CRT Controller.....	5
Using the 8275 DMA VS. non-DMA.....	7
HARDWARE DESCRIPTION.....	8
The physical circuit.....	8
The keyboard interface.....	8
The monitor interface.....	9
Dot clock and high speed timing.....	11
The character generator.....	11
SOFTWARE.....	12
Background.....	12
Software overview.....	12
CONCLUSION.....	13
APPENDIX A.....	14
APPENDIX B.....	16
APPENDIX C.....	19
APPENDIX D.....	21
APPENDIX E.....	23
APPENDIX F.....	25
APPENDIX G.....	40

## ABSTRACT

This report contains details of methods used to interface an ASCII keyboard and a monitor to a simple Intel 8085 based system. Details of two methods are given and compared. The first method used the Intel 8257 DMA (direct memory access) controller, the Intel 8279 keyboard controller, and the Intel 8275 CRT controller. This method was partially unsuccessful. Details are given about the design problems that were encountered and how they changed the original design. In the second method employed the need for the DMA controller was eliminated, the 8279 was replaced with the Intel 8255, and memory mapping was used.